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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/527,483

11/15/2005

Erling Hammer

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11/08/2006

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EXAMINER

HE, AMY

ART UNIT

PAPER NUMBER

2858

DATE MAILED: 11/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/527,483

Applicant(s)

HAMMER, ERLING

Examiner

Amy He

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 September 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 and 12-16 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-8 and 12-16 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 10 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 3, 4, 8 and 14-16 are objected to because of the following informalities:

(1) Claims 3, 4, 14 and 15, it appears that the wire or cords or flat Cu-lices having the specific thickness as claimed is used for the first and second coil designs. If so, appropriate corrections are required to amend the claims to recite that the wire or cords are used for the first and second coil designs.

(2) Claims 8 and 16 (claiming a single coil design) is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim (claims 1 and 12 claiming a two coil design). Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Appropriate corrections are required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-2 and 4-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As for claims 1-2 and 4-8, the independent claim 1 recites that "each coil is used as excitation and detection coils". However, it is unclear whether or not the recitation meant that (1) the first and second coils are used as an excitation coil and a detection coil respectively or (2) each of the first and second coils could be used both as a excitation coil and a detection coil? Since Figure 1 of the instant application shows a separate excitation coil 12 and a detection coil 14, for the purpose of examination, the examiner assumes that the recitation in claim 1 meant that the first and second coils are used as an excitation coil and a detection coil respectively.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 5-6 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Hammer (U. S. Patent No. 6, 782,736).

As for claim 1, Hammer discloses a method (in Figures 4 or 6; see col. 3, lines 1-50; col. 4, lines 31-43; col. 5, line 5-39) for determining the content of a conductive component (water) of a multi phase flow through a pipe, by supplying alternate voltage

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(using 41; or 62 and 64) to one or more coils (40; or 50 and 57) being arranged around the fluid conducting pipe (44; or 54), and then detecting the attenuation of the magnetic fields due to the induced power loss or the coil impedance at resonance, dependent on the conductivity of any conductive phase component (water) of the fluid flow, characterized in measuring the impedance of the coils at resonance frequency, said impedance varying as a function of content of the conductive phase, by using:

a first coil design (any one of 40, 50, 57, 42 and 56) having a given number of windings optimized for non-conductive continuous mixtures, and

a second coil design (any one of 40, 50, 57, 42 and 56, as long as it is different from the first coil selected above) of a different number of windings optimized for conductive continuous mixtures (since applicant fails to specifically define how is the coils optimized, any one of the coils as listed above is considered to be optimized for the particular mixtures as claimed) wherein the first (40, or 50, or 57) and second coils (42 or 56) are used as an excitation coil and a detection coil respectively.

As for claim 2, Hammer discloses that the two coils are operating at two different frequencies ( $f_1$  and  $f_2$ , see Figure 6) in order to compensate for variation in the conductivity, hence determining said conductivity of the conductive phase.

As for claim 5, Hammer discloses using a resonance frequency in the range of 1-10MHz, and preferably in the range of 2 to 8 MHz (5 to 15 MHz, see claim 2; col. 2, lines 64-65).

As for claim 6, Hammer discloses using a resonance frequency of 5.5 MHz (claim 2; col. 2, lines 64-65) in order to obtaining a penetration depth in the multiphase flow, of about 10 cm, corresponding to at least half the pipe diameter.

As for claim 12, it is the apparatus claim corresponding to the rejected method claim (claim 1). It is rejected for the same reasons as stated above for the rejection of the method claim.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3-4, 7-8, and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hammer (U. S. Patent No. 6, 782,736), in view of JP 61204357A (see abstract).

As for claims 3-4, 7-8, and 13-16, Hammer discloses the method/apparatus as in claims 1 and 12. Hammer does not specifically disclose using wire or cords including Cu-lices having a thickness less than the electrical skin depth of copper; or using a flat Cu-lines at a thickness of 40 um; or using a first coil design of one layer of 15 windings of flat Cu-cord, operating at a frequency of 2 MHz, and a second coil design of 4 layers

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of 4 windings of flat Cu-cord operating at a frequency of 9 MHz; and using one coil of 9 turns.

JP61204357A discloses using copper foil having a thickness of 35 microns, which is less than the electrical skin depth of copper, for its good electrical conductivity, strength, and low cost (see abstract).

A person of ordinary skill in the art would find it obvious at the time of the invention to modify Hammer to use coil made of copper (Cu-lices is defined as copper in the specification), since it is conventional and routine in the art to use copper coil for its good electrical conductivity, strength, and low cost as evidenced in JP61204357A). In addition, one skilled in the art would find it obvious to choose a specific coil thickness, numbers of layers and windings/turns, and operating frequency, as claimed, dependent upon the specific resources available or required, since the frequency is determined by the coil thickness and number of windings (see Hammer reference, col. 2, lines 66-67).

### ***Response to Arguments***

5. Applicant's arguments filed September 6, 2006 have been fully considered but they are not persuasive.

In response to applicant's argument that the Hammer reference does not show the "two separate coils used in such a way as to optimize the impedance variation as a function of content of the conductive phase as shown"; it is noted that the features upon which applicant relies (i.e., two separate coils used in such a way as to optimize the impedance variation as a function of content of the conductive phase) are not recited in

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the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

In response to applicant's argument that "Hammer does not disclose optimization"; and that Hammer is "quite different from the optimization disclosed and claimed", it is noted that since applicant fails to recite what is being optimized (i.e., the first and second coil design? or the given number of windings?) and most importantly, how the optimization is carried out, the first and second coil designs of Hammer reference are considered as a first and second coil designs optimized for the particular mixtures under test. Or the first and second given number of windings, as used by Hammer, can be considered as the number of windings optimized for the particular mixtures under test.

In response to applicant's argument regarding claims 3 and 14, Hammer in view of JP 61204357A discloses the method/arrangement for determining content of a conductive component of a multi-phase flow through a pipe, wherein the wire used including copper foil having a thickness of 35 microns (see abstract of JP 61204357A), which is less than the electrical skin depth of copper (for frequency range of 60Hz-1MHz, the electrical skin depth of copper ranges from 8.57mm-66um).

In response to applicant's argument that the present invention involves the avoidance of frequency dependent resistance in the coil windings to maintain a constant copper loss in the coil, and how this is accomplished is not found from the Hammer reference, it is noted that the features upon which applicant relies (i.e., the avoidance of



frequency dependent resistance in the coil windings to maintain a constant copper loss in the coil) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

### ***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy He whose telephone number is (571) 272-2230. The examiner can normally be reached on 8:30am-5pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on 571-272-2168. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AH   
October 31, 2006.

  
ANDREW H. HIRSHFELD  
SUPERVISORY PATENT EXAMINER  
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